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IN TWO SECTIONS

Section I

IN THIS ISSUE

Cotton Gin Profit Charts,
by W. E. Paulson..... 1093

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EDITORIAL DEPARTMENT NOTE

Not many of our members are connected with or have contact with cotton gins, but we suggest that you do not overlook the article in this issue of the *Bulletin* because of lack of contact with the industry. This article provides a most complete and thorough exposition of the application of the profit chart type of analysis to a specific type of business, and the principles are just as applicable in other fields as in the field of cotton ginning.

The author of this article, W. E. Paulson, graduated from the University of Wisconsin in 1917 with a major in Economics. In 1923 he was granted the Ph.D. degree in Agricultural Economics by the same institution. For five years following 1923 Dr. Palson taught Marketing in the School of Agriculture at Purdue University. Since 1928 he has served as Research Specialist in Marketing with the Texas Agricultural Experiment Station and for the past five years has been giving much of his time to a study of the costs and profits of Texas cotton gins. The Texas Agricultural Experiment Station has recently issued Bulletin No. 606, "Cost and Profit of Ginning Cotton in Texas," by Dr. Paulson. Several other bulletins pertaining to this study are in preparation.

Articles published in the *Bulletin* present many different viewpoints In publishing them the Association is not sponsoring the views expressed, but is endeavoring to provide for its members material which will be helpful and stimulating. Constructive comments are welcomed and will be published in the Forum Section of the *Bulletin*.

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COTTON GIN PROFIT CHARTS

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THE COMMERCIAL GINNER has service to sell. His patrons desire high quality service at the lowest possible charge. The success of the ginning business may be measured in terms of the net returns realized on ginning operations. In the main, net profits of ginning are influenced by the relative efficiency of operations, volume of business and gross income.

The ginner obtains his gross income, primarily, from three sources: the gin toll or charge, collected for ginning service; the sale of bagging and ties; and the sale of cottonseed. Likewise the ginner has three items of cost: the cost of operating the gin plant; the cost of the bagging and ties; and the cost of the cottonseed. Obviously, the net profit of the ginner is the difference between the gross incomes and the costs of the three departments.

Gin Income

In calculating net profit, as discussed in this paper, gin income and not gross gin income, is used. Gin income is the total of the gin tolls and the net profits on patterns and cottonseed. The ginner invariably sells patterns to his customers at a price above cost. He invariably pays his customers a price for their cottonseed that is lower than the price received from the oil mills. Thus the ginner has a margin of profit on these two items. Furthermore, the profit per pattern and the profit per ton on the cottonseed are but remotely related to the volume of ginning.

The net profit of ginning is the difference between the gin toll and the cost of operating the gin plant. According to an analysis of ginning costs in Texas,[1] two variables, volume of ginning and investment in the gin plant,[2] account for from 71 to 89 per cent

[1] The details of the analysis of ginning costs are discussed in Bulletin 606 "Cost and Profit of Ginning Cotton in Texas," issued by A. & M. College of Texas.

[2] Investment in machinery, buildings, office equipment, and other fixed assets, but not in land.

of the variations in costs from gin to gin. At a given investment in the gin plant, the higher the volume of ginning, the lower the cost per bale. From this it follows, the higher the volume at a given gin toll per bale, the greater the net profit of ginning per bale. Thus the volume of ginning is a fundamental factor in the net ginning income per bale.

The gin incomes per bale among the various sections of Texas show rather wide differences. The average gin incomes per bale, for the period 1930-31 to 1938-39 were as follows: the Blackland Area (See Figure 1), $5.20; the Gulf Coast Area, $6.40; and the High and Low Plains Area, $6.85. The gin toll varies according to both the rate charged per cwt. of seed cotton and the weight of seed cotton per bale. The net profit on bagging and ties varies according to the margin between the purchase and sales prices. The net profit on cottonseed varies according to both the margin between the price paid patrons and the price received from the oil mill and the average weight of cottonseed per bale sold by the patrons to the ginner.

Tables of Net Gin Profits

The net gin income is the gin income less the cost of ginning. Costs of ginning for combinations of investments in gin plants and volumes of ginning may be recorded in table form. For instance in the case of steam gins in the Blackland Area, if investments for a range of $6,000 to $30,000 be taken by $2,000 intervals, and if volume of ginning up to 3,000 bales be taken by 100-bale intervals, costs of all these combinations of investments and volumes may be recorded with 390 entries. Net profits of these steam gins with a gin income of $5.25 per bale may be registered in a table with the same number of entries, the cost of ginning in each case according to investment and volume being deducted from the gin income of the corresponding volume.

Net profits of a gin with a given investment and volume of ginning vary with the gin income per bale. Circumstances in a given section of the state may be such that a thorough analysis of the net profits of the gin business would require the consideration of gin incomes per bale by 25-cent intervals from $4.50 to $7.00. This would require 11 tables with 390 entries in each table. Furthermore, smaller intervals of investment and volume might be de-

FIGURE 1.—Sections of Texas. 1. Blackland Area. 2. High and Low Plains Area. 3. Gulf Coast Area.

Each dot represents a gin within the county from which cost records were obtained.

sirable. This would add to the number of entries in each table. It must be noted further that this number of tables would be duplicated for each type of power of the three sections in the state. This situation emphasizes the desirability of showing net gin incomes by means of charts from which readings may be made for the various combinations of variables affecting net incomes. Such a chart must show net incomes as related to gin income per bale, cost of ginning, and volume of ginning.

Estimating Costs of Ginning

To insure the greatest possible uniformity of conditions under which gins operate, the state was divided into three sections as shown in Figure 1. For the sake of convenience, the sections are designated as: the Blackland Area; the High and Low Plains Area; and the Gulf Coast Area.

One of the essentials in estimating net profits of ginning is a means for estimating costs of ginning. Costs vary with the investment in the gin plant and the volume of ginning. The influence of these two factors is expressed in a series of estimating equations which have been developed.

Equations for Estimating Costs of Ginning

The equations for estimating average costs of ginning according to size of gin (one battery, or more), type of power, and section of the state are listed below.

BLACKLAND AREA

Cost, Steam Power	= $1,730	+ $0.0930I	+ $1.78V[1]
Cost, Diesel Power	= 2,198	+ 0.0887I	+ 1.37V
Cost, Electric Power	= 2,089	+ 0.0592I	+ 2.05V

HIGH AND LOW PLAINS AREA

Cost, Steam Power	= $3,392	+ $0.0592I	+ $2.25V
Cost, Diesel Power	= 1,973	+ 0.1120I	+ 1.76V

[1] I— Investment in the gin plant; for each added dollar invested in a steam plant in the Blackland Area, the cost of ginning is increased by 9.3 cents.

V— Volume of ginning; for each added bale ginned in a steam plant in the Blackland Area, the cost of ginning is increased by $1.78.

Cost, Electric Power = 1,528 + 0.1122I + 2.42V
Cost, Large Gins = 5,080 + 0.1052I + 1.75V

GULF COAST AREA[2]

Cost, Diesel Power = $1,711 + $0.0957I + $1.99V
Cost, Electric Power = 938 + 0.0953I + 2.59V

ALL TEXAS

Cost, Average = $2,035 + $0.0879I + $1.91V

First Step in Constructing a Profit Chart

One of the purposes of this detailed explanation of the gin profit charts is to enable a ginner to construct a chart applying to his own specific gin. The first step in developing a profit chart is to construct a combined cost and income chart. For the purpose of illustration, this chart may be constructed for a $15,000 steam gin in the Blackland Area. A gin income of $5.25 per bale is assumed. In the matter of estimating the cost of ginning of this particular gin, the equation for steam gins in the Blackland Area is the one applying to this particular case.

The $1,730 in the cost equation above, is the portion of the cost which is unrelated to the investment in the gin plant and the volume of ginning; this cost may be referred to as the residual cost. For an investment of $15,000, the investment cost is $0.0930 x 15,000, or $1,395. The residual cost added to the investment cost, or $3,125, is the fixed cost of ginning. This fixed cost remains constant through the normal range of volumes of ginning. For a volume of 3,000 bales, the variable cost is $1.78 x 3,000, or $5,340. The total cost of ginning at a volume of 3,000 bales is the sum of the fixed cost and the variable cost, or $8,465.

In Figure 2, the fixed cost of $3,125 was plotted on the 0-Bale Axis; the sum of the fixed and variable costs of $8,465 was plotted on the 3,000-Bale Axis. The straight Line B joining these two points marks the total cost of ginning for a range of volumes from 0 to 3,000 bales for a steam gin with an investment of $15,000 in the Blackland Area. The gin income on 3,000 bales at a gin in-

[2] Not more than 11 cost records were obtained on steam plants in the Gulf Coast Area; this is too few a number to serve as the basis of a cost equation. It is suggested that operators of steam plants in the Gulf Coast Area use the estimating equation for steam plants in the Blackland Area.

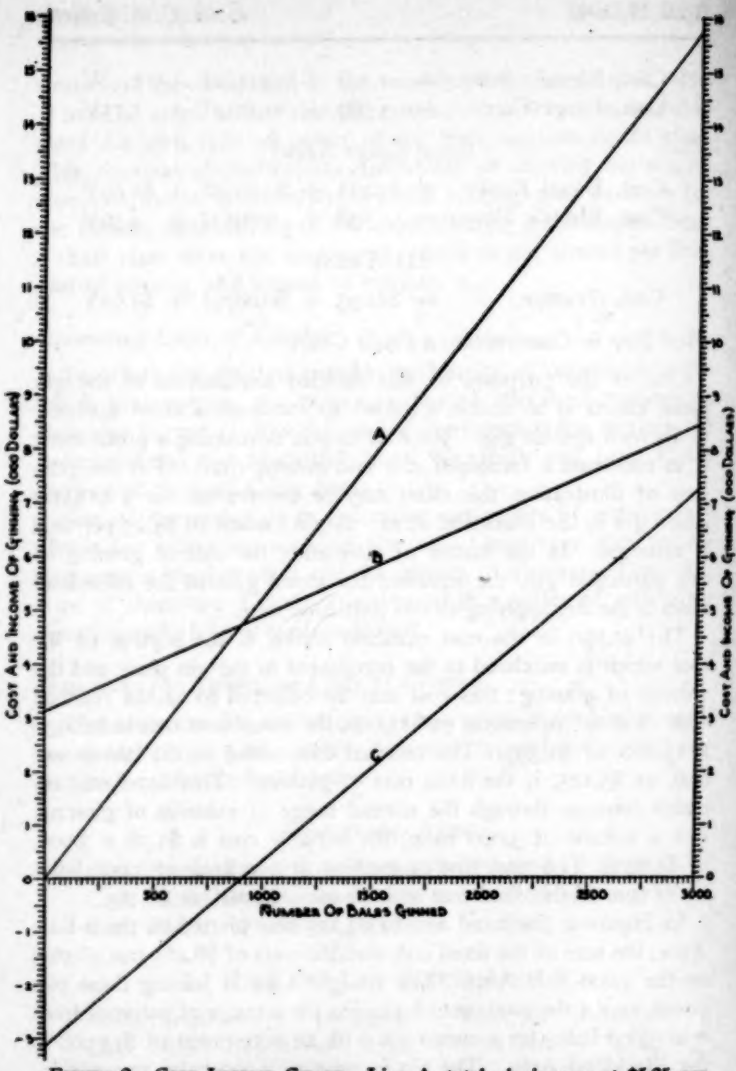

FIGURE 2.—COST INCOME CHART. Line A, total gin income at $5.25 per bale. Line B, total cost of ginning. Line C connects points on the O-Bale and 3000-Bales axes marking the cost of ginning measured from Line A. Thus the area between Line C and the O-Profit Axis is the remainder of the gin income after the cost of ginning has been deducted. Consequently, any reading on Line C gives net profit, or net loss, direct.

come of $5.25 per bale is $5.25 x 3,000, or $15,750. This gin income was plotted on the 3,000-Bale Axis. The straight Line A joining the 0-Income point on the 0-Bale Axis with the $15,750 point on the 3,000-Bale Axis marks the gin income for volumes of ginning from 0 to 3,000 bales.

Reading Net Profits on a Cost-Income Chart

Figure 2 with its cost and gin income lines may serve as a profit chart. At a volume of 500 bales, for instance, the chart shows a gin income of about $3,800 and a cost of ginning of about $4,020. The net income is the difference, or a loss of about $1,420. Line A and Line B intersect at a volume of about 910 bales. This is the "break-even" volume in that gin income and cost of ginning are identical. At a volume of 2,000 bales, the gin income is about $10,500; the cost of ginning is about $6,700. The net profit is the difference or about $3,800.

It is apparent that a determination of the net profit at a given volume of ginning requires two readings—one for cost and one for gin income—and a subtraction. This procedure is made necessary from the fact that the cost of ginning and the gin income are measured from the same 0 Cost Income base line. If a line could be located which would subtract the cost of ginning from the gin income, profit readings would be greatly simplified.

At zero bales, the cost of ginning measured from Line A registers at the point, $3,125. At 3,000 bales, the cost of ginning measured from Line A registers at the point, $7,285. These points were plotted on the 0- and 3,000-Bales Axes and connected by the straight Line C. Thus Line C marks the boundary of the cost area measured from Line A. Consequently, the area between Line C and the 0-Profit Axis is the remainder of the gin income after the cost of ginning has been deducted. Thus readings on Line C give net profits, or net losses, direct. This eliminates the need of making a cost reading and an income reading and then of finding the difference between the two. At 500 bales, a reading on Line C shows a net loss of about $1,420; at 2,000 bales a net profit of about $3,800.

It should be clear that there is no need of drawing the cost and gin income lines in order to construct a profit chart. The profit-volume line may be drawn directly by connecting the fixed cost

plotted as a loss on the 0-Bale Axis with the net profit plotted on the Volume Axis of the upper range of the volume considered.

The gin income per bale fluctuates with every change in the gin toll per cwt. and in the weight of the seed cotton per bale and with every change in the margins of profit on patterns and cottonseed. For this reason, a profit chart applying to only one gin income per bale would not be satisfactory. The next step in the construction of the profit chart is to include profit-volume lines for gin incomes by regular intervals.

In Figure 3 the profit-volume line for a gin income of $5.25 per bale was drawn precisely as in Figure 2. At a volume of 3,000 bales, a gin income of 25 cents per bale makes a total of $750. The net profit on 3,000 bales at a gin income of $5.50 per bale is $7,285 + $750, or $8,035; at a gin income of $5.75, $7,285 + $1,500, or $8,785. At a gin income of $5.00 per bale the net profit on 3,000 bales is $7,285 — $750, or $6,535; at a gin income of $4.75 per bale, $7,285 — $1,500, or $5,785. In connecting these profit points by $750 intervals from the profit point of $7,285 on the 3,000-Bale Axis with the —$3,125 point on the 0-Bale Axis, a series of profit-volume lines for gin income by 25 cent intervals were located. This procedure explains how Figure 3 was constructed. Figure 3 may be considered a complete profit chart for steam plants in the Blackland Area with an investment of $15,000. If a ginner wishes to show profits by 10-cent intervals, the profit to be added, or deducted, at 3,000 bales for each interval is $300.

How to Construct a Profit Chart

As for the range of volumes of ginning to be covered in the profit chart, a maximum of 3,000 bales in the Blackland Area, 4,000 bales in the High and Low Plains and Gulf Coast Areas, and 8,000 bales for the multiple battery gins of the Plains Area should prove adequate. As for the range of gin incomes per bale to be included, incomes by 10 or 25 cent intervals from one or two dollars below to one or two dollars above the average gin income in the area should be adequate.

In preparing to construct a profit chart for his own gin, a ginner needs to select the estimating equation applying to his section of the state and type of power. By multiplying the investment factor

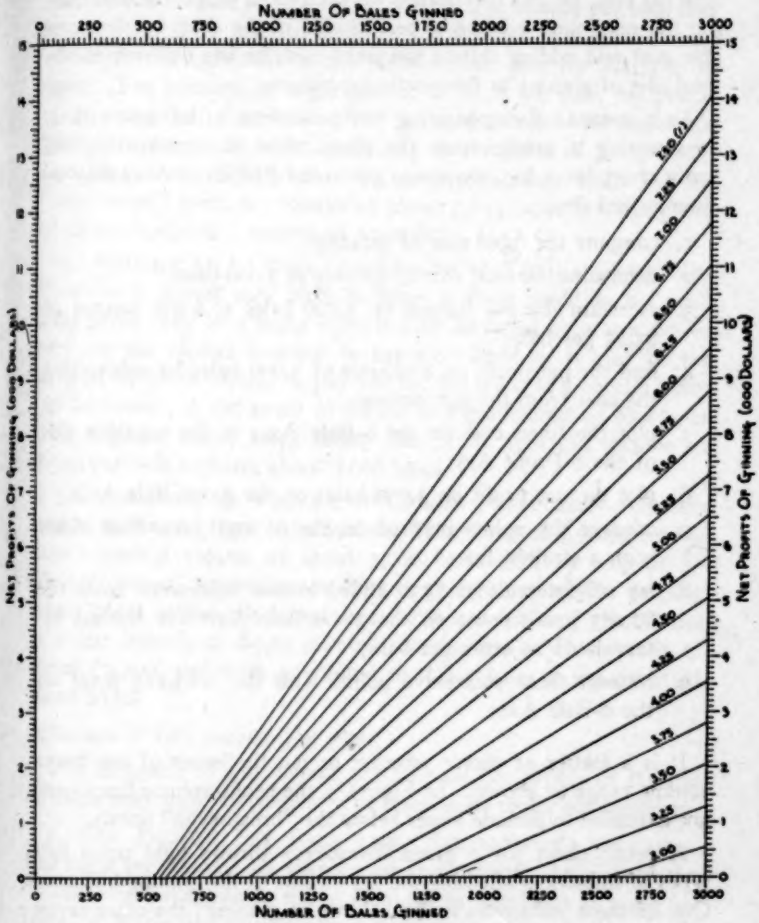
Number Of Bales Ginned
0 250 500 750 1000 1250 1500 1750 2000 2250 2500 2750 3000
Net Profits Of Ginning (000 Dollars)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
4.00
3.75
3.50
3.25
3.00
Number Of Bales Ginned
Net Profits Of Ginning (000 Dollars)

FIGURE 3.—Complete profit chart for $15,000 steam gin in the Blackland Area.

(1) Profit volume lines according to gin income per bale.

in the equation of his own gin investment and adding to this the residual cost, he has determined his own fixed cost. By multiplying the maximum volume to be included in the chart by the variable cost and adding this to the fixed cost, he has determined the total cost of ginning at this particular volume.

As a means of emphasizing the procedure to be followed in constructing a profit chart, the steps taken in constructing the profit chart for a $15,000 steam gin in the Blackland Area may be summarized thus:

1. compute the fixed cost of ginning;
2. determine the total cost of ginning at 3,000 bales;
3. ascertain the gin income on 3,000 bales at a gin income of $5.25 per bale;
4. find the net profit on a volume of 3,000 bales by subtracting the cost from the gin income;
5. plot the fixed cost on the 0-Bale Axis to the negative side of the 0-Profit Axis;
6. plot the net profit on 3,000 bales on the 3,000-Bale Axis;
7. connect the points marked on the 0- and 3,000-Bale Axes with a straight line;
8. lay off intervals of $750 added to and subtracted from the $7,285 profit point on the 3,000-Bale Axis for income intervals of 25 cents per bale;
9. connect these successive points with the —$3,125 point on the 0-Bale Axis.

It is a matter of choice whether or not the losses of the lower volume range be shown. In Figure 3, the profit-volume lines were not extended to include losses below the "break-even" points.

A profit chart for a given investment throws light upon two types of influences affecting the net income of the ginning business. One of these influences is the volume of ginning; the other is the gin income per bale.

Influence of Volume of Ginning

The influence of volume of ginning on net profits may most conveniently be considered under three headings:

1. Volume at a Given Gin Income Per Bale—The influence of the volume of ginning at a given gin income per bale may be ascertained by making readings for volume through the range of net profits indicated by the profit-volume line for that gin income. For instance, at a gin income of $5.25 per bale, net profits range from 0 of the "break-even" point at a volume of about 890 bales to a net profit of about $7,285 at a volume of 3,000 bales; at a gin income of $4.50 per bale, net profits range from 0 of the "break-even" point at volume of about 1,145 bales to a net profit of about $5,035 at a volume of 3,000 bales.

2. Volume at a Given Gin Income to Yield a Given Net Profit—A ginner may have in mind a given profit as his goal. This profit may be a lump sum; it may be based on a specific return on the capital invested in the gin plant; or it may be the amount of profit needed to pay for the gin plant in a certain number of years. A net profit of $2,500 at a gin income of $5.25 per bale requires about 1,615 bales; this profit at a gin income of $4.50 per bale requires about 2,060 bales.

3. Reduction in Volume of Cotton Production—Ginners with a volume of 1,500 bales under a Texas crop of 4,500,000 bales may expect a volume of about 1,000 bales under a crop of 3,000,000 bales. According to Figure 3, a ginner with a $15,000 steam plant in the Blackland Area with a volume of 1,500 bales at a gin income of $5.25 per bale would realize a net profit of about $2,100, and with a volume of 1,000 bales a net profit of about $350.

Influence of Gin Income Per Bale

The influence of gin income per bale on net profits of the gin business may most conveniently be considered under six headings:

1. Gin Income Per Bale and "Break-Even" Volume—Readings for volume of ginning on the 0-Profit Axis show the "break even" volumes to range from about 540 bales at a gin income of $7.50 per bale to about 2,565 bales at a gin income of $3.00 per bale.

2. Gin Income Per Bale and a Given Profit—For a net profit of $2,000 the volumes range from about 890 bales at a gin income of $7.50 per bale to about 2,975 bales at a gin income of $3.50 per bale.

3. Gin Income Per Bale and a Given Volume of Ginning —For a volume of 1,250 bales net profits range from about $300 at a gin income of $4.50 per bale to about $4,050 at a gin income of $7.50 per bale.

4. Given Volume and Given Profit—A ginner with a volume of 1,500 bales may have as his goal a net profit of $2,500. His problem is to determine the income per bale which yields the desired profit. The profit chart indicates that a gin income of about $5.50 per bale is required.

5. Reduction in Gin Income Per Bale—Competition at a given gin point may be such as to force gin rates from 30 cents per cwt. to 25 cents. In the Blackland Area this means a reduction of about 75 cents in the gin toll per bale. If the gin income per bale is $5.50 under the 30 cent rate, the gin income would be reduced to $4.75 under the 25 cent rate. A ginner with a volume of 1,250 bales would earn a net profit of about $1,525 under the higher gin income per bale and about $600 under the lower gin income per bale.

6. Rebating of Gin Charges—The ginner buying the cotton from his patrons at a price above the market is resorting to one form of rebating. A ginner may pay above the market on cotton purchased with the idea of increasing his profits through increasing his volume of ginning. The necessary increase in volume according to the amount of the over-payment may be read on the profit chart. A ginner in the Blackland Area with a $15,000 steam plant realizes a net profit of about $2,460 on a volume of 1,500 bales at a gin income of $5.50 per bale. If he buys the cotton at one dollar above the market, his gin income of $4.50 per bale, requires, according to the profit chart, a volume of about 2,040 bales to earn a net profit of about $2,460. Only as this ginner can increase his volume above 2,040 bales can he add to his total profit by taking a loss of one dollar per bale on the cotton purchased. The effect of this reduction of one dollar in gin income from a volume of 1,500 bales and upward may be read on the profit-volume line for a gin income of $4.50 per bale.

A ginner who overpays by one dollar a bale to maintain his volume at 1,500 bales has his net profit reduced to about $960.

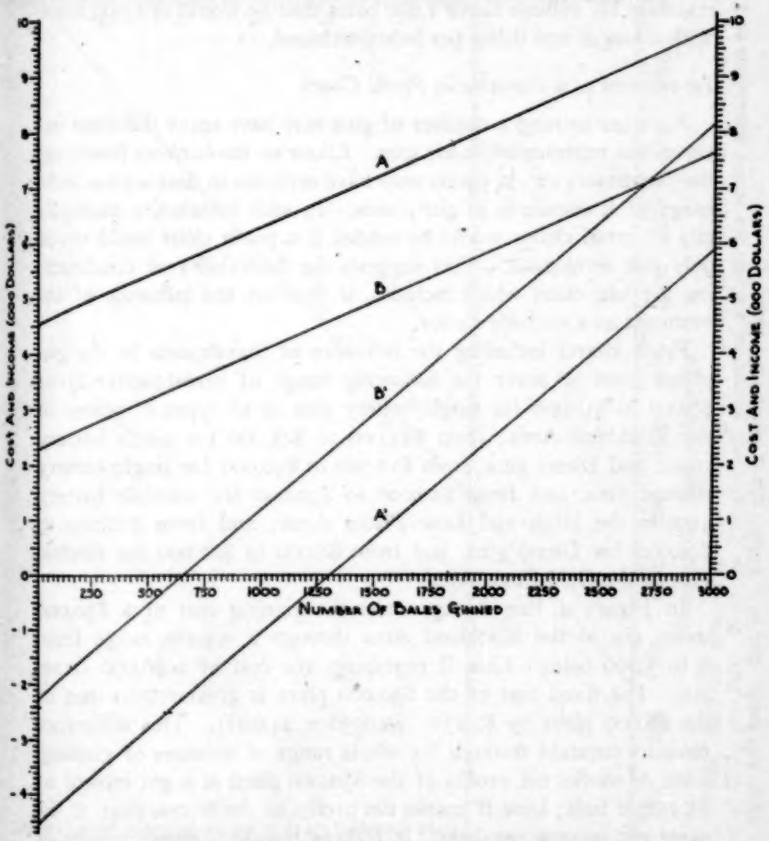

FIGURE 4.—COST AND NET PROFIT ACCORDING TO INVESTMENT. Line A, cost of ginning of $30,000 plant. Line B, cost of ginning of $6,000 plant. Line A', net profit at gin income of $5.25 per bale of $30,000 plant. Line B', net profit at gin income of $5.25 per bale of $6,000 plant.

A net profit of $960 at a gin income of $5.50 requires a volume of about 1,090 bales. Thus the ginner who refuses to overpay for cotton purchased would enjoy a greater profit provided he could maintain his volume above 1,090 bales than he would at 1,500 bales with a loss of one dollar per bale purchased.

Investment as a Variable in Profit Chart

A ginner owning a number of gins may have many different investments represented in his gins. Likewise the bankers financing the purchasers of gin plants may have occasion to deal with a wide range of investments in gin plants. In such instance, a multiplicity of profit charts would be needed if a profit chart could cover only one investment. This suggests the desirability of constructing a profit chart which includes, if possible, the influence of investment as a variable factor.

Profit charts including the influence of investments in the gin plants need to cover the following range of investments: from $6,000 to $30,000 for single battery gins of all types of power in the Blackland Area; from $14,000 to $45,000 for single battery steam and Diesel gins, from $12,000 to $40,000 for single battery electric gins, and from $20,000 to $90,000 for multiple battery gins in the High and Low Plains Area; and from $10,000 to $40,000 for Diesel gins, and from $8,000 to $22,000 for electric gins in the Gulf Coast Area.

In Figure 4, line A represents the ginning cost of a $30,000 steam gin in the Blackland Area through a volume range from 0 to 3,000 bales. Line B represents the cost of a $6,000 steam gin. The fixed cost of the $30,000 plant is greater than that of the $6,000 plant by $2,232 ($0.0930 x 24,000). This difference remains constant through the whole range of volumes of ginning. Line A′ marks net profits of the $30,000 plant at a gin income of $5.25 per bale; Line B′ marks net profits of the $6,000 plant at the same gin income per bale. It follows that at a given volume of ginning and a given gin income per bale, net profits of a $6,000 plant are greater by $2,232 than those of a $30,000 plant.

Let Figure 4 be thought of as being composed of two profit charts, the one superimposed upon the other. Suppose the chart of the $30,000 gin be moved vertically by a distance of $2,232. Thus a 0-Profit Axis is established for the $30,000 gin at this dis-

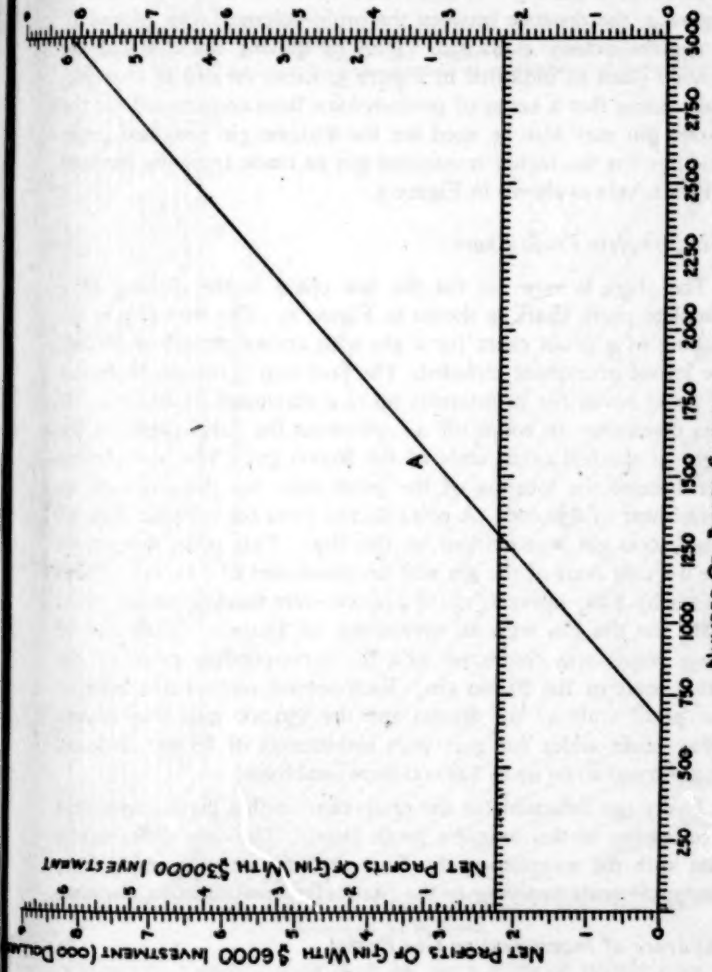

FIGURE 5.—Profit chart for steam gins with investments of $6,000 and $30,000. Line A, net profit at gin income of $5.25 per bale. Note the "break-even" volume of a $6,000 gin with a gin income of $5.25 per bale is about 660 bales; that of a $30,000 gin is about 1,300 bales.

tance from the o-Profit Axis of the $6,000 gin. This situation is pictured in Figure 5. It must also be noted that as shown in Figure 4, the distance between the profit-volume Lines A′ and B′ at a given volume is $2,232. Thus by moving the chart of the $30,000 plant as indicated in Figure 5, Lines A′ and B′ coincide. This means that a series of profit-volume lines constructed for the $6,000 gin may also be used for the $30,000 gin provided profit readings for the higher investment gin be made from the elevated o-Profit Axis as shown in Figure 5.

The Complete Profit Chart

The stage is now set for the last phase in the making of a complete profit chart as shown in Figure 6. The first step is the making of a profit chart for a gin with an investment of $6,000, the lowest investment included. The final step is the establishment of profit scales for investments up to a maximum of $30,000. It was convenient to count off 24 spaces on the ruled paper to the right of the left profit scale of the $6,000 gin. The last vertical line became the location of the profit scale for the gin with an investment of $30,000. A point $2,232 from the o-Profit Axis of the $6,000 gin was marked on this line. This point determines the o-Profit Axis of the gin with an investment of $30,000. Profit points by $500 intervals up to $14,000 were marked on the profit scale for the gin with an investment of $30,000. Each one of these points was connected with the corresponding point on the profit scale of the $6,000 gin. Each second vertical line between the profit scale of the $6,000 and the $30,000 gins was drawn. Thus profit scales for gins with investments of $8,000, $10,000, $12,000 and so on up to $28,000 were established.

Every use indicated for the profit chart with a given investment also applies to the complete profit chart. The only difference is that with the complete profit chart readings must be made from the profit scale applying to the particular investment in question.

Influence of Investment on Gin Profits

In addition to showing the influence of volume of ginning and the gin income per bale on net profits, the complete profit chart also shows the influence of investment on net profits. In the main,

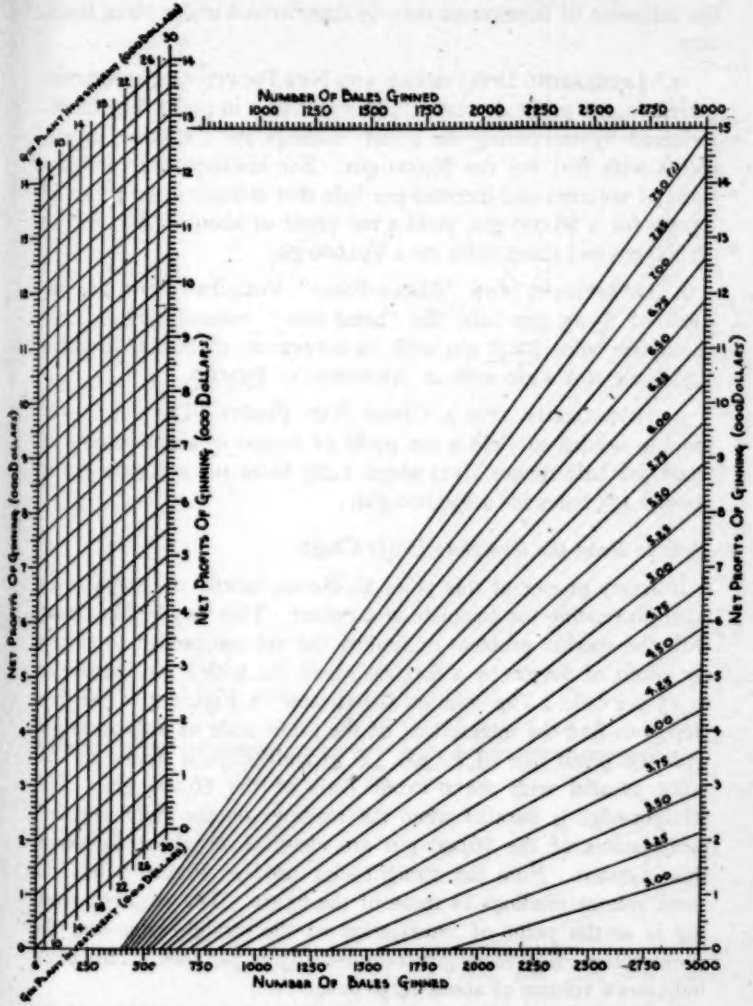

FIGURE 6.—Complete profit chart for steam plants of average efficiency in Blackland Area.
(1) Net profit according to gin income per bale.

the influence of investment may be summarized under three headings:

1. Increasing Investment and Net Profit—As investment increases, net profit decreases. This decrease in profit may be determined by comparing the profit readings for the other investments with that for the $6,000 gin. For instance, the combinations of volumes and incomes per bale that indicate a net profit of $3,000 for a $6,000 gin, yield a net profit of about $2,820 for an $8,000 gin and about $780 for a $30,000 gin.

2. Investment and "Break-Even" Volume—At a gin income of $5.25 per bale, the "break-even" volume ranges from about 660 bales for a gin with an investment of $6,000 to about 1,300 bales for a gin with an investment of $30,000.

3. Investment and a Given Net Profit—The volume of ginning needed to yield a net profit of $2,500 at a gin income of $5.00 per bale ranges from about 1,485 bales for a $6,000 gin to about 2,175 bales for a $30,000 gin.

How to Read the Complete Profit Chart

It seems proper at this point to discuss briefly the steps to be taken in reading the complete profit chart. This may be illustrated with the specific problem of finding the volume needed to earn a net profit of $2,500 by a $20,000 steam gin with a gin income of $5.25 per bale. The solution is indicated in Figure 7. The first step is to find the intersection of the profit scale of a $20,000 gin with the profit line of $2,500. A straight-edge is placed at this point parallel with the 0-Profit Axis of the $6,000 gin. The straight-edge is parallel when the readings on the right and left profit scales of the $6,000 gin are identical, or about $3,800 in this instance. Note the straight-edge used in Figure 7 has the same volume readings as those of the figure. The required reading is at the point of intersection of the straight-edge and the profit-volume line for a gin income of $5.25 per bale. This point indicates a volume of about 1,750 bales.

The straight-edge as placed in Figure 7 makes possible volume readings for gin incomes by 25 cent intervals from $4.00 per bale to $7.50. At a gin income of $7.50 per bale, the volume indicated is about 1,060 bales; at $4.00 per bale, about 2,740 bales. Profit

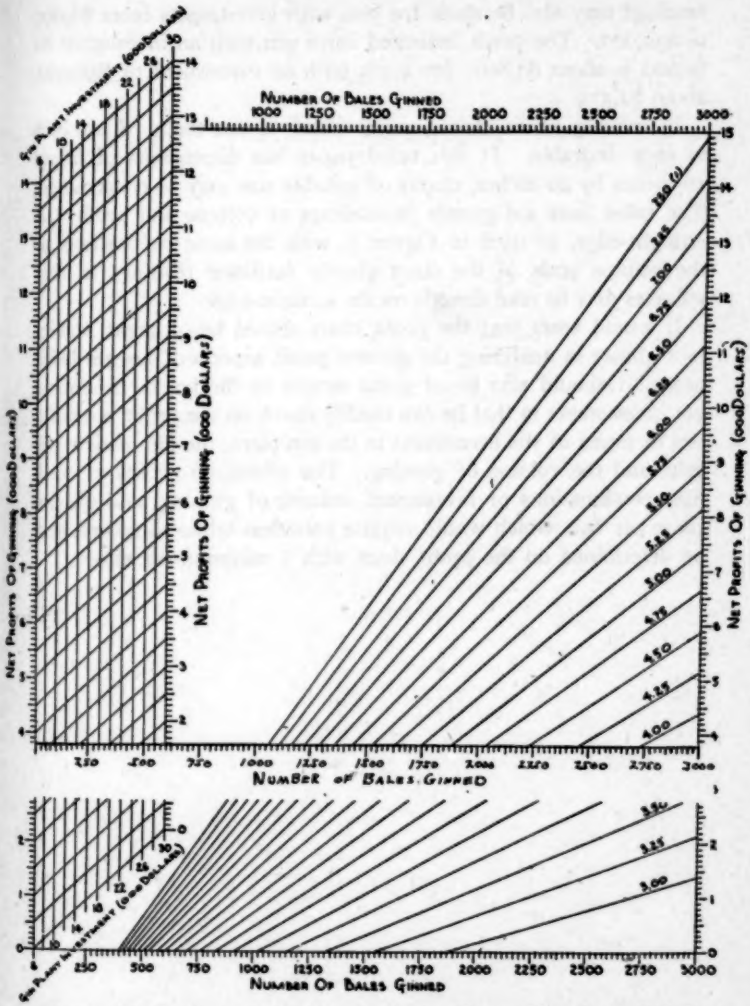
Number Of Bales Ginned
1000 1250 1500 1750 2000 2250 2500 2750 3000
Gin Plant Investment (000 Dollars)
Net Profits Of Ginning (000 Dollars)
Number of Bales Ginned
Gin Plant Investment (000 Dollars)
Number Of Bales Ginned

FIGURE 7.—Reading complete profit chart. The problem is to find the number of bales needed to earn a net profit of $2,500 by a $20,000 gin at a gin income of $5.25 per bale. A volume of about 1,760 bales is indicated.

readings may also be made for gins with investments from $6,000 to $30,000. The profit indicated for a gin with an investment of $6,000 is about $3,800; for a gin with an investment of $30,000, about $1,575.

In making profit charts, paper ruled to one-tenth of an inch is very desirable. If this ruled paper has dimensions of about 16 inches by 20 inches, charts of suitable size may be constructed. The ruled lines aid greatly in readings of volume and profit. A straight-edge, as used in Figure 7, with the same calibrations as the volume scale of the chart greatly facilitate readings in that volumes may be read directly on the straight-edge.

It would seem that the profit chart should be of great service to a ginner in analyzing the general profit aspects of his gin business. It should also be of great service to the banker financing gin investments in that he can readily check on the profit possibilities in terms of the investment in the gin plant, the gin income per bale, and the volume of ginning. The effects on profits of multiple combinations of investment, volume of ginning, and gin income per bale which would require countless tables to record may be determined on the profit chart with a minimum of effort.

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